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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/661,627	09/15/2003	Shinichi Kawate	03500.017588	7929

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EXAMINER
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SANTIAGO, MARICELI

ART UNIT	PAPER NUMBER
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2879

DATE MAILED: 01/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/661,627

Applicant(s)

KAWATE ET AL.

Examiner

Mariceli Santiago

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 20 October 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) 24-28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 9/04, 12/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Election/Restrictions*

Claims 24-28 withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Election was made **without** traverse in the reply filed on October 20, 2005.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 19 and 21-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Resasco et al. (US 6,333,016).

Regarding claims 1-3, 19 and 21-23, Resasco discloses a method of producing carbon fibers, comprising applying a liquid which includes dispersed particles onto a substrate, oxidizing the particles disposed on the substrate and then reducing them, and a step of forming a carbon fiber by contacting the reduced particles with a carbon containing gas (Column 8, lines 22-53), wherein the particles are an alloy of the two or more kinds of elements (Column 4, lines 52-65) including PD and at least one element selected from the group consisting of Fe, Co, Ni, Y, Rh, Pt, La, Ce, Pr, Nd, Gd, Tb, Dy, Ho, Er, and Lu. Resasco further discloses the use of the carbon nanotubes in electron field emission devices, accordingly, the conventional structural limitations of electron emitting devices as claimed are considered within the teachings of Resasco's disclosure.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 5, 6, 9-13, 15-17 and 19-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tennent (US 5,171,560).

Regarding claims 1, 2, 5, 6 and 19-23, Tennent discloses a method of producing carbon fibers, comprising applying a water-soluble polymer liquid (polystyrene) which includes dispersed particles onto a substrate (Example 34), oxidizing the particles disposed on the substrate (Example 35) and then reducing them (Example 36), and a step of forming a carbon fiber by contacting the reduced particles with a carbon containing gas (Example 37), wherein each of the particles contains at least two kinds of elements (iron oxalate crystals), wherein the particles are an alloy of the two or more kinds of elements (Column 8, lines 25-37).. Although, Tennent fails to exemplify the use of the manufactured carbon fibers in electron-emitting devices, one skilled in the art would reasonable contemplate such use since carbon fibers are known in the art to have excellent electron-emitting capabilities.

Regarding claim 9 and 10, Tennent is silent in regards tot the limitation of the polymer being contained by 0.1wt.% or more and 30 wt% or less with respect to the liquid, however, one skilled in the art would reasonable contemplate optimization of the wt% ranges when the general conditions of a claim are disclosed in the prior art, since discovering the optimum or workable ranges involves only routine skill in the art. Furthermore, applicant's claimed wt% does not solve any of the stated problems or yield any unexpected result that is not within the scope of the teaching applied. Accordingly, it would have been obvious to one having ordinary skill in

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the art at the time the invention was made to provide the claimed polymer's wt% with respect to the liquid, since optimization of workable ranges is considered within the skill of the art.

Regarding claims 11-13, Tennent discloses a method wherein the average particle size of the particles is between 1-100nm, 1-50nm or 1-20nm.

Regarding claims 15-17, Tennent discloses a method wherein the particles are contained by a ratio of 1 g/L or less with respect to the liquid, by a ratio of 0.1 g/L or less with respect to the liquid, or by a ratio of 0.01 g/L or more with respect to the liquid (Column 7, lines 1-2).

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Resasco et al. (US 6,333,016).

Regarding claim 4, Resasco is silent in regards to the limitation of the particles contain at least one element selected from the group consisting of Fe, Co, Ni, Y, Rh, Pt, La, Ce, Pr, Nd, Gd, Tb, Dy, Ho, Er, and Lu by 5 atm % or more and 80 atm % or less (atomic percentage) with respect to Pd, however, one skilled in the art would reasonable contemplate optimization of the atm% ranges when the general conditions of a claim are disclosed in the prior art, since discovering the optimum or workable ranges involves only routine skill in the art. Furthermore, applicant's claimed atm% does not solve any of the stated problems or yield any unexpected result that is not within the scope of the teaching applied. Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the claimed atm%, since optimization of workable ranges is considered within the skill of the art.

Claims 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Resasco et al. (US 6,333,016) in view of Nadkarni et al. (US 4,948,573).

Regarding claims 6-8, Resasco fails to disclose the limitation of the liquid further comprising a water-soluble polymer selected from the group consisting of polyvinyl pyrrolidone, polyvinyl alcohol, polyacrylic acids, and further from the group consisting of polyacrylic acid, polymethacrylic acid, and homologue thereof. However, in the same field of endeavor, Nadkarni discloses a method of manufacturing carbon-based fibrils, wherein a water-soluble polymer (polyvinyl alcohol, Column 5, lines 49-60) is incorporated with the metal-containing particles in order to provide a metal-containing solution in which the particles are substantially unagglomerated and separated from each other by the polymer. Nadkarni fails to exemplify the use of polyacrylic-based materials, however, one skilled in the art would reasonable contemplate the use of known polyacrylic-based materials on the basis of its suitability for the intended use as a matter of obvious design choice. Thus, it would have been obvious to one having ordinary skills in the art at the time the invention was made to have water-soluble polymer components as disclosed by Nadkarni in the method of Resasco in order to provide a metal-containing solution in which the particles are substantially unagglomerated and separated from each other by the polymer.


#### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mariceli Santiago whose telephone number is (571) 272-2464. The examiner can normally be reached on Monday-Friday from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel, can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Mariceli Santiago  
Primary Examiner  
Art Unit 2879